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101,945

PATENT

SPECIFICATION



Application Date, July 3, 1916. No. 9333/16.

Complete Accepted, Nov. 2, 1916.

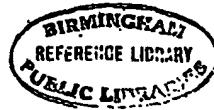
COMPLETE SPECIFICATION.

Improvements in or relating to Milking Machine Teat Cups.

I, JAMES TRELOAR, of Victoria Street, Hamilton, in the Dominion of New Zealand, Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

- 5 This invention relates to the teat cups of milking machines of the well known type in which an inner flexible lining, or "inflation" is combined with an outer rigid casing, which inflation, in the milking operation, is caused to alternately squeeze and release the teat placed within it by the use of the well known appliances.
- 10 The invention has been devised specially in order to provide a new and improved form of inflation for use in such a teat cup, by means of which the squeezing action of the inflation on the teat and the full release of the teat from such squeeze will be more effectively obtained than with the forms of inflation at present known or in use.
- 15 To this end, the invention consists in constructing the inflation of a particular form in cross section such as to close upon the teat at four equidistant points around it, so as thereby to automatically centre the teat within it and obtain an even pressure all round, and also of such a shape longitudinally as to provide for the special squeeze mentioned being directed first at the top end of the teat, and then working downward to its bottom end.
- 20 The objects of the invention are effected by constructing the inflation of a shape in cross section approximating to a parallelogram of equal sides, and thus having its two diagonals at right angles to one another. The corners at the opposite ends of one diagonal are strengthened, as compared with those at the ends of the other, so that they form fulcra upon which the adjacent sides will bend inwards when the inflation is subjected to the collapsing pressure of the milking operation. This will cause the teat to be engaged by each of the four sides at the same time, thereby centring the teat and subjecting it to even pressure all round.
- 25 The details of construction may be varied in a number of ways without departing from the general principle of its construction and working. For instance, the inflation may be made with equal diagonals uniformly throughout its length, or its diagonals may be made of relatively different lengths throughout, or of relatively different lengths at the upper end and gradually altering to equal lengths at the lower end. The longitudinal action by which the inflation will close in first at the upper end and then close in down to its lower end, may be obtained by any of the methods already well known in the art, such as by
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[Price 6d.]



increasing the thickness of the wall towards the lower end, or by forming buttresses in the corners increasing in strength towards the lower end but when the inflation is made with one diagonal of its upper end longer than the other, and both diagonals of the same length at its lower, the increased area of the walls at such upper end will cause the collapse to first take place there by reason 5 of the greater area upon which the pulsating air pressure acts.

The accompanying drawings illustrate the manner of carrying out the invention in which the inflation is formed with differential lengths of diagonals at the upper end and with equal diagonals at the lower.

In such drawings:—

Figure 1 is a longitudinal section of the inflation on a line taken through the major diagonal thereof.

Figure 2 is a similar view taken through the minor diagonal.

Figure 3 is a plan of the inflation.

Figure 4 is a sectional plan thereof taken on the line 4—4 of Figure 1.

Figure 5 is a sectional elevation of the complete teat cup embodying the special form of inflation.

Figure 6 is a sectional plan thereof taken on the line 6—6 of Figure 5.

A is the inflation which in this invention is made of sectional shape in cross section approximating to an equal sided parallelogram. The corners at the 20 ends of one diagonal are made of increasing strength, as at B, and the sides may be gradually tapered to a comparative weakness at the other corners, as at C, so that in closing in, the inflation's four sides will turn on the corners B as indicated by the dotted lines in Figure 6. The corners B may be otherwise strengthened if so desired while the four sides may be made of even thickness 25 and either curved in or out to form convexities or concavities extending down the inflation that will either impinge into the teat or curve around it; as may be desired. The corners C may also, instead of being rounded as shown, be formed flat across or angular, or in any other approved manner.

The inflation thus constructed will, in its operation, while in the normal 30 expanded condition be drawn well back from the teat so as to provide for the teat swelling to its fullest extent and opening its duct fully. Then on the inward collapse on the teat it will close in at four points, centreing the teat between its sides and exerting a tight even squeeze all round the teat, the teat by reason of the centreing action, being unable to get away from such action. This squeeze 35 extending all down the teat will prevent any distortion thereof, so that the milk will be fully expressed from the duct.

As beforementioned, the inflation is preferably so made as to provide for the pressure on the teat being directed first at the top end and then working down to its point. This may be effected by any of the general methods already known 40 in the art. It may also be effected by constructing the inflation in the manner shown in the drawings, that is by forming the upper end with its diagonals of relatively different lengths and with the sides sloping inward to its bottom end to form diagonals of equal length to one another and to the length of the shorter diagonal at its top end. It will be apparent that with such a construction, the 45 area of the sides at the upper end will be greater than at the lower end and gradually decrease from the upper to the lower end. Consequently the amount of air pressure around the top will be greater than at the bottom, causing the top to close in first in the manner desired.

An inflation thus constructed is adaptable for use with any desired shape of 50 casing and may be secured at its top and bottom ends to the corresponding ends of the casing in any of the known and approved ways. In the drawings it is shown as being combined with a casing D of a cross sectional shape corresponding with that of the inflation. It is secured therein at its upper end by means of a flange E formed to project beyond the outer edges of the inflation being 55 held between the top edge of the casing and a metal plate F screwed on to such casing. This plate has a central mouthpiece opening G that coincides with a

similar opening in the top end of the inflation and forms the aperture through which the teat is passed. At its lower end, the inflation is secured by closing such end and inserting the ordinary nipple fitting H through an aperture provided for such purpose, a lock nut H¹ screwed upon the nipple and engaging the bottom of the casing obtaining the tension in the inflation in the well known way. Provision may be made for taking up any slackness by the employment of a rubber washer, or a number of washers J, between the inflation and casing bottom which may be removed when the inflation stretches with use and the stretch taken up by the nut. Or the lower end of the inflation may be formed with thick layers which may be cut off from the bottom up, as required.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

- 15 1. In milking machine teat cups, the combination with a casing, of an inflation constructed of a shape such as to approximate in form in cross section to an equal sided parallelogram, substantially as specified.
- 20 2. In milking machine teat cups, the combination with a casing, of an inflation constructed of a shape such as to approximate in form in cross section to an equal-sided parallelogram and with the corners at the ends of one of its diagonals of greater strength than those at the ends of the other diagonal, substantially as specified.
- 25 3. In milking machine teat cups the combination with a casing, of an inflation constructed of a shape such as to approximate in form in cross section to an equal sided parallelogram, such parallelogram at the upper end of the inflation being formed with its diagonals of relatively different lengths and with the sides of the inflation narrowing downward to form at the lower end a parallelogram with diagonals of equal length, substantially as specified.
- 30 4. The milking machine teat cups, constructed, arranged and operating substantially as herein described and as illustrated in the accompanying drawings.

Dated this 3rd day of July, 1916.

BOULT, WADE & TENNANT,
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Chartered Patent Agents.

[This Drawing is a reproduction of the Original on a reduced scale]

